



Linkages among climate change, crop yields and Mexico-US cross-border migration

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Year: 2010
Journal: Proceedings of The National Academy of Sciences of The United States of America. 107 (32): 14257-14262

Abstract:

Climate change is expected to cause mass human migration, including immigration across international borders. This study quantitatively examines the linkages among variations in climate, agricultural yields, and people's migration responses by using an instrumental variables approach. Our method allows us to identify the relationship between crop yields and migration without explicitly controlling for all other confounding factors. Using state-level data from Mexico, we find a significant effect of climate-driven changes in crop yields on the rate of emigration to the United States. The estimated semielasticity of emigration with respect to crop yields is approximately -0.2, i.e., a 10% reduction in crop yields would lead an additional 2% of the population to emigrate. We then use the estimated semielasticity to explore the potential magnitude of future emigration. Depending on the warming scenarios used and adaptation levels assumed, with other factors held constant, by approximately the year 2080, climate change is estimated to induce 1.4 to 6.7 million adult Mexicans (or 2% to 10% of the current population aged 15-65 y) to emigrate as a result of declines in agricultural productivity alone. Although the results cannot be mechanically extrapolated to other areas and time periods, our findings are significant from a global perspective given that many regions, especially developing countries, are expected to experience significant declines in agricultural yields as a result of projected warming.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2922556>

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES B1

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

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audience to whom the resource is directed

Policymaker

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Security, Human Conflict/Displacement

Extreme Weather Event: Drought

Food/Water Security: Agricultural Productivity

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States, United States

Non-United States: Non-U.S. North America

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction, Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status, Workers

Resource Type:

format or standard characteristic of resource

Research Article

Resilience:

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capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content